(7/66) T ON ANNE MAIN RARE BINDE

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THE abstract of a tract on competitions, prepared by the Committee on Professional Practice of the American Institute of Architects, and presented by them with their report to the Convention of November last, is given in another column. The subject is one of the most important that architects have to consider; and the rights and wrongs of it, imperfectly understood by the profession, are as Hebrew to the public at large. At present the public regards competition as a means of extracting from architects greater services, and at a less price, than is possible under the ordinary arrangements; and architects, for the sake of getting an advantage over their fellows, are tempted to descend to tricks and endure humiliations which they would scout in their regular business. It is hard to say to which the influence is more demoralizing. The committee in their report do not assume to lay down the law either to the profession at large or to the Institute; but offer the memorandum of advantages and disadvantages and suggestions for conduct which they have prepared to the consideration of architects throughout the country, in hope of receiving hints and opinions from all sides, which will help them in preparing an essay of practical value to the whole profession. We shall be glad to see the subject discussed in our columns. It seems safe to say that a proper solution of the difficulties is not to be reached by lecturing building-committees on their duties, and then acceding to whatever they think fit to propose; but by carefully discussing the real bearings of the question, both on clients or committees and on architects, and then by the latter agreeing among themselves what it is right to do, and abiding by it.

THE January number of Van Nostrand's Engineering Magazine contains an interesting article from the stranger's point of view, on the Condition and Prospects of Architecture in the United States, by Mr. Fogerty of the Royal Institute of British Architects. The article purports to be written for the Magazine, but is evidently composed on the other side of the ocean, and addressed to a British audience; and we shall not be surprised to see it presently appear in the reports of one of the British associations. It concerns itself much more with the condition than with the prospects of our architecture; and gives in the main a fair and certainly a friendly account. It represents things, however, more as they were some years ago than as they are now, — except in the mention of special works, — and its generalizations seem better suited to New York than to the country at large. Mr. Fogerty renews criticisms which he made when he was in the country formerly, and which are just and yet are not just; that is to say, they are true of a part of the profession, but not characteristic of it as a whole. His chief complaint is, that our architects neglect the practical part of their profession for the æsthetic. A good many of them undoubtedly do; but it is just as true that a good many, perhaps more, neglect the æsthetic for the practical. The trouble is partly where Mr. Fogerty seems inclined to put it, in the want of a proper system of training among our architects; but our average training is as good on the practical side as on the æsthetical, — we are tempted to say, better, though the practical men and the æsthetical men are very often not the same men, here as elsewhere. A great difficulty is the fact that the public, while it knows the amount of labor that practical excellence implies, and is willing to pay for it, does not in general know how much work good design costs, and is not willing to pay enough for both. Our present practice commonly requires the same individual architect not only to be thoroughly versed in both, which is reasonable; but to give constant and minute attention both to design and execution, which is impracticable, and for the same fee, which in many cases is unreasonable. Some division of labor in the work is essential. It has been supplied among us in two ways, — by partnership, in which one member assumes the designing and another the practical administration of the work, or by hiring special superintendence; but neither way has become general. The architect can seldom afford the latter: the client is not often willing to pay for it. The English device of a clerk of the works under control of the architect has not yet obtained a foothold here, desirable as it is; and the other invention which sometimes has supplied its place with us, a superintendent who is independent of the architect, is subversive of the natural order of things. When Mr. Fogerty says, "I am convinced that the American public only requires to be shown what well-qualified architects really can and ought to do for them, to appreciate and remunerate them correspondingly," we feel sure that the opinion he implies as to the character and standing of the profession here is based on a very partial knowledge.

Mr. Fogerty gives a good general view of the different classes of buildings which are built among us, and does full justice to their good qualities and to the advance of the last one or two decades. He particularizes the town houses of New York, though they are no more typical than those of other cities, and perhaps have less character, and notes that but few of them are built by architects. We suppose that this is true, and that one reason is that a great part are built by speculators, for whoever may buy or lease them; another, that a great many houses that are built for those who are to live in them belong to wealthy men of little cultivation, who are less aware than their better educated fellows of the difference between professional and unprofessional design; and still another, that proprietors and occupants are contented with a stereotyped form to which they are used, and than which they imagine none better. The paper, however, bears witness that when a house of special elegance is wanted, or any building of more exacting type, an architect is employed; though it does hint that he is apt to be considered as a mere draughtsman, unfit to be trusted with any thing beyond the limit of his drawing-board. In spite of this unflattering impression, we are disposed to infer from the generally indulgent tone of Mr. Fogerty's comments on our work, that he only requires to be shown what our well-qualified architects really do, and can do, both practically and artistically, to appreciate them accordingly.

THE improvements which are going on at the mouth of the Mississippi will be watched with great interest. The last Congress, after receiving the report of the commission sent to examine the mouths of rivers of the Eastern Continent, ordered the commission to improve the South Pass of the Mississippi by building out beyond the bar parallel piers or jetties, which, confining the current, should extend its flow out into the present region of deep water, with the expectation that then, the bar being removed by dredging if necessary, the scouring action of the current would make and preserve a deep channel through it. A contract was made

with Mr. James B. Eads, C.E., on the agreement that his first payment should be received when the depth of water on the bar, at present only nine feet, should be increased to twenty feet, and subsequent payments being made for every two feet gained in addition, the full compensation should only be given when the depth attained reached thirty feet. The jetties are to be sustained by piles, filled in, and faced with stone to secure them against the wash of the water. The piling has already in five months been carried out from the land's end in the eastern side over two miles, to well beyond the crest of the bar, and the jetty in good part raised to the water level, while the outer end of the western jetty has been piled, the progress of the work showing that the bottom gives sufficient support for the construction. Doubts have been expressed among engineers as to the wisdom of the committee's recommendation, some advocating the improvement of Pass à l'Outre, or the construction of a canal, where, having no current, it should not tend to deposit a bar; but the committee, of whom Gen. J. G. Barnard is president, are confident of success. The experiment was tried in 1858, at the Sulina mouth of the Danube, and has secured a depth of over twenty feet with a much less flow than that at the South Pass. A similar experiment tried at the mouth of the Rhone was unsuccessful, it is said, because the jetties were not extended to the bar. A bar is formed of course wherever the rapid current, pouring into the water of the gulf, is sufficiently checked to deposit the mud or silt which it brings; and the building-out of jetties is but forming a new mouth, with a tendency to the formation of a new bar beyond, and so is in the nature of things only a temporary expedient. How many years it will be before a new bar forms, it is impossible to estimate; but it is likely to be retarded by the abrading action of the tide, to which the South Pass is more exposed than the other Mississippi passes. When it occurs, the same expedient may be tried again, if another more promising one is not found.

THE movement in favor of the metric system is steadily gaining ground among us Americans. People are finding out that the present confused methods of weighing and measuring are intolerable, and there is every reason why the metric system should be the one to replace them. It is well, therefore, if there are signs of some interest in the change among what are called practical men, whose inertia would be sure to weigh heavily on a practical Congress. When the capitalists who are to be affected by the change are converted to advocacy of it, the battle may be accounted won. The question of memorializing Congress to enforce the change has been brought before the American Society of Civil Engineers; and we suppose that body to be in favor of it. It was also pressed in the Convention of the Institute of Architects; but they decided, wisely we think, to delay action till they were better assured that the movement had acquired the necessary momentum. Congress is not likely to do any thing in matter till it is urged, and it is important to urge it in due time. It is as well, however, not to waste force by an attack which has not sufficient pressure behind it.

JAPANESE HOUSES.

WITH all the attention that is now given to Japanese art, very little is devoted to the architectural side of it; yet, though in Japan other arts are practised with relatively higher results, there seems to be room for some interesting study of their ways of building. Apparently the earthquakes to which Japan is subject reduce the people to the alternative of building either so massively that their structures shall withstand the shocks by sheer solidity, or so slightly that they may yield to the vibration by their elasticity, and so escape injury. They have naturally chosen the latter method, and the slightness of their buildings is perhaps reason enough for their attracting so little notice from travellers. The following notes on their house-building have been gathered mainly from the untechnical descriptions of a traveller.

It will be remembered that the architecture of Japan, like that of China, is essentially wooden. Masonry is rarely used except for engineering work, and is apt to be laid with a considerable batter, to secure its greater stability; the bonding of the angles being not horizontal, but in planes at right angles to the inclined arrises, so as to give the greatest possible security against lateral vibration. Where wrought stone work is used, its forms are essentially those of wooden construction. A striking commentary on the theory which derives the structure of the Greek Doric from a wooden prototype, and on the famous example of the Lycian tombs, may be found in Japan, where the stone gateways of the temples, and even stone bridges, are copied exactly, we are told, from wooden models; so exactly that in the gateways, whic' are all variations on the simple type of two upright posts framed together with a straight lintel or cross-bar, and a slightly curved roof-tree, not only are the mortises and tenons exactly copied, but the very keys or wedges that serve to bring these parts to their bearings are repeated in the stone. Paper screens, too, play a large *rôle* in domestic building, since the partitions and even the outer walls of houses are in great part made of them. As a natural consequence of the use of such inflammable material, the Japanese proprietors, in the cities at least, expect to have their houses burned down on an average once in seven years.

Cellars are unknown in Japan, and foundation walls rarely used. Commonly a house simply rests on flat stones laid on the ground under each post. The posts are squared, and placed only at the angles of the house and of the rooms into which the interior is to be divided, except where the bearings of the floor timbers and partition girders are long enough to require intermediate supports. None of the partitions, and only the most exposed parts of the outer walls, are filled in solidly; the filling is of withes or wattling, woven firmly together, and covered with plaster within and without. The houses are commonly bordered on one, two, of three sides by verandas of about a yard wide, and the plastered wall only built on the other sides. When a stone underpinning is used, which is seldom, it is placed, not under the main wall of the house, but under the edge of the veranda for appearance' sake.

The one substantial part of a Japanese house is the roof. It is cunningly and solidly framed of stout timbers, so that it might almost be held up by the four corners, and is practically as independent of the slight posts beneath as a dish-cover is of the dish on which it rests. In fact, it is not uncommon, where a house is overthrown by a gale or an earthquake, to see the light partitions and walls swing over like the sides of a child's card house, and the roof, a heavy mass of hips and gables, sit flat on the ground entirely unharmed. The roof is commonly covered with tiles of a uniform lead or slate color, but in the country often with thatch. Tiles are of an ogee section, like such as are often used in Germany, and hook into each other laterally, requiring no covering tiles for the joints. Ridges, hips, and eaves are ornamented with crestings, finials, and antefixæ, vigorously and fancifully designed. In some parts of Japan it is usual to paint the tiles in stripes up and down the roof. In Nagasaki a plain white border is carried round each slope of the roof, marking out the planes as do the flashings on a new slated roof with us: sometimes vertical stripes are added, which divide the slopes into panels. The straight line is much more predominant than in Chinese roofs, but sometimes the main roof is carried in a bold concave sweep over the veranda. The veranda roof, when separate, is often covered with very small shingles, hardly more than two inches wide, and showing three or four inches to the weather. The roofs

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of the temples (like all their structure) are more ornate than in private houses, and hollow curves prevail in them. An article by Mr. E. W. Godwin in the Building News of Feb. 12, 1875, gives some interesting notes on the construction of these roofs.

The houses are one or two stories high, or partly one and partly two, and usually consist of verandas, a vestibule, an entry or entries communicating with various rooms and containing the principal staircase, and often a back entry with one or two *escaliers de service*. The partitions are of movable screens covered with paper or matting. These screens are about six feet high, and in sections of a yard or so wide. At the foot of each partition a rail about four inches thick is laid across the floor, with a groove in which the bottoms of the screens rest. From the level of the top of the screen to the ceiling is a fixed frame or upper partition; and a slot in the bottom of this receives the upper ends of the screens, which, being slipped into the slot, can be lifted enough to clear the rail at the foot, and allow the lower edges to drop into the groove, where they rest firmly like the shutters of a shop window. Thus at any moment any partition can be taken down, and two or more rooms, or the whole house, be thrown into one large apartment, broken only by the posts which marked the corners of the rooms. Doors and windows, as we use them, there are none. So much of the outer wall as is solidly built is unbroken by any openings. A screen left out anywhere gives a doorway, and the windows are simply screens covered with translucent paper. The frames or partition-tops over the screens are plastered in the poorer houses; but in the better are filled with wood carved, often very richly, in open work, and sometimes of various kinds and colors. The outside of the veranda is open during the day, but at night is closed in with broad shutters put up in sections like the partition-screens, completely filling each bay between the slight posts which carry the roof, and barred on the inside. These board screens of the verandas are closely packed by day in a kind of box or closet which is built at one end of the piazza, and at night are taken out and slid one by one into position until the last one, barred, completes a close wall all around. An outsider who comes to the house when it has been shut finds only an unbroken plastered wall, and an equally unbroken smooth boarding, surrounding the whole house. No metal nails are used: all the woodwork is framed and tree-nailed together; and all is unpainted, inside and out, except, it may be, the tiles on the roof. The slender square posts are unrelieved by chamfers or any sort of ornament, and the angles unbroken by bracketing. Small battens are sometimes nailed on the under side of the boarding with which the soffit of the eaves is sheathed, looking like tiny rafters set close; but commonly the only ornament is that of the tiling and terra-cotta work of the roof, which is often profuse.

The floors of the rooms are of rather loose boarding, and are always covered with heavy mats. Those of the entries are sometimes left bare, and then are carefully wrought and polished. The ceilings are also of polished boarding, nicely fitted.

The unit of measure of the house, curiously enough, is the floor-mat. These mats are always made of uniform size, about three by six feet; they are some four inches thick, so as to come to the tops of the rails in which the partitions are set, and are made of straw solidly tied or woven together with twine, and with a facing of fine-woven straw work. The edges have a cloth binding of three-quarters of an inch wide, so that when they are laid down a cloth band of about an inch and a half defines their joints. Every room, and therefore of course every house, is planned to be floored or carpeted with a definite number of these mats. A twenty-mat room is considered in Japan, as it would be here, a good-sized room; and it is common to speak of a three-hundred-mat house, or five-hundred-mat house. All the partition and window screens, likewise, are of exactly one size, and also the board screens of the verandas, so that from one end of the empire to another any mat, or any screen, shutter, or window, will fit its place in any house. Mats, screens, windows, and shutters, in fact, are considered as furniture, not as fixtures. Houses are usually sold or let without them; and, when a tenant quits or a proprietor sells a house, he takes them all away, and leaves to his successor only a solid roof and floors, held together by a strip or two of plastered wall and a few slender posts, through and through which all the winds of heaven may dance.

ABSTRACT OF A PROJECTED TRACT ON COMPETITIONS.

CHAPTER I. — THE ADVANTAGES OF COMPETITIONS.

§ 1. *To the client and to the work:* as, —

1. Giving a fuller discussion of his problem;
2. Increasing the chance of his being suited;
3. Increasing the chance of happening on a fortunate inspiration;
4. Opening a chance of discovering unknown talent;
5. Stimulating the exertions of competitors;
6. Saving committees from responsibility in the choice of an architect;
7. Enabling him to get a great deal of advice cheap or gratis.

§ 2. *To the architect:* as, —

1. Opening the chance of extending his practice and reputation;
2. Giving him experience in designing large work.
3. The freedom from supervision in design gives these exercises the character and the advantages of an academic discipline.

§ 3. *To the community:* as, —

1. Encouraging new talent;
2. Restricting favoritism and jobbery.

CHAPTER II. — THE NECESSARY DISADVANTAGES OF COMPETITION.

§ 1. *To the client and to the work:* —

Suspension of intercourse with the architect, during the progress of the design, —

1. Prevents the client from fully explaining his wants;
2. Or correcting the errors and omissions of his programme;
3. Or finding out what he really does want.
4. Hence the whole work may be misdirected from the outset.
5. The architect works in the dark, not fully understanding the case;
6. The stimulus and the restraint of such intercourse is removed;
7. He is tempted to extravagance or caprice in design, or to commonplaceness, or merely academic merit; the guaranties of *bona-fide* and serious work being gone.
8. This want of seriousness and unreality in competitive designs is fostered by the large element of chance in these undertakings.

It still further lowers the standard of competitive work: —

9. That the problem set before the architect is not how best to solve the problem, but how to secure the work, and he has no assurance that the two go together; he thinks that the drawings will be only superficially considered;
10. And is tempted to aim at superficial and *ad captandum* qualities;
11. Moreover, in an *open* or *unlimited* competition the men most desired may refuse to take part;
12. A *close* or *limited* competition necessarily implies certain restrictions and prejudices;

13. Competitions may result, and often do, in the choice of an impracticable design by an irresponsible person, or an ill-considered and undigested scheme.

§ 2. *To the Architect:* —

1. Waste of time and money if he goes in, lest he be distanced by show, not by merit;

2. Loss of his fair share of opportunity if he stays out;

3. Loss of credit if he is frequently defeated;

4. Hard terms if he is successful;

5. Submission of his case, often, to an incompetent tribunal.

§ 3. *To the Community.*

Important interests are jeoparded by these chances.

CHAPTER III. — UNNECESSARY BUT COMMON DISADVANTAGES.

Competitions are further discredited and their usefulness defeated by want of perfect good faith either (*a*) in clients, or (*b*) in competitors.

(*a*) They are sometimes resorted to by committees not to secure a design, nor to choose an architect, but to gain time, or to make a show of fair dealing, so as to cover schemes of favoritism or jobbery. Unfairness may be shown by committees, —

1. By giving unjust judgment on the designs;

2. By imposing hard terms, and so forcing the winner to withdraw;

3. By refusing to employ the successful candidate;

4. By cribbing from the rejected designs;

5. By accepting designs that violate the conditions laid down.

(*b*) The competitors themselves often vitiate competitions, —

1. By violating the conditions laid down;

2. By sending in extra drawings;

3. By intriguing with committees.

Whoever enters a competition owes it to his fellows to adhere loyally to the conditions imposed. The essence of fair play in these contests is equality of advantage. All should work under the same conditions and restrictions, — "conditions which in entering the lists an architect covenants with his fellow-competitors not to transgress." If he thinks the programme a stupid one, he should reserve his suggestions until the competition is decided.

CHAPTER IV. — WHEN COMPETITIONS ARE USEFUL, AND WHEN NOT.

(*a*) It is plain that competitions are a poor way of securing a good design: —

1. Where the conditions are so complicated that a great deal of explanation is necessary to enable the architect to fully understand the programme;

2. Where consultation is necessary before the client can understand what he wants himself;

3. Where special technical research is required on both sides (as in hospitals, for instance);

4. Where some special kind of skill and experience is essential.

(*b*) But good results may be expected, —

1. Where the problem is so simple that the conditions may easily be fully stated;

2. Where it is so familiar that the architect can supply omissions out of his general knowledge (as with churches);

3. Where novelty is a main object.

(*c*) And competitions may well be resorted to, not to obtain a good design, but as a means of selecting an architect, —

1. Where the conflicting claims of patronage or of professional merit render a choice difficult;

2. In public works, where an outright appointment would be improper, and open to suspicion of jobbery or favoritism.

(*d*) General (or open) and limited or (close) competitions: —

Open Competitions have in the fullest degree all the advantages and all the disadvantages already enumerated.

1. The disadvantages generally preponderate.

2. They are seldom desirable except for very simple work.

3. Their chief advantage is as a training-school for beginners, who can have no better employment of their time than working out real problems under the stimulus and excitement which a competition affords.

4. But, if adopted in large and complicated public works, it is at great risk, since the chance of any return is too slight to warrant any experienced practitioner in giving as much labor as such problems require.

Limited Competitions, confined to a number of specially invited architects, —

1. Are able to secure serious work from competent men, the chance of employment being greater, and a certain amount of favor and consideration being already implied.

2. They are free from many of the evils of open competitions.

3. Most of the advantages of competitions are secured.

4. But they are of course of but little value in bringing forward new men, except by the chances of personal favor.

A mixed system is sometimes adopted, that of inviting a certain number to compete on advantageous terms, and allowing others to send in designs on less favorable conditions.

1. But this though ingenious is practically of little value, since the preference avowedly expressed for the few discourages the rest from seriously entering the lists.

2. But it is as advantageous to beginners as open competition.

The case of *Informal Competitions*, in which different persons are invited or permitted to make designs independently, demands special study.

1. In this case it is difficult to avoid the imputation of unfairness.

2. Each of the competitors is likely to suppose that he enjoys a special preference.

3. And some one among them is likely to be right about it.

CHAPTER V. — HOW COMPETITIONS HAD BEST BE CONDUCTED.

This chapter has been presented more in full than the rest, and will be so printed in the next number. Its principal points are: —

§ 1. *Instructions.*

That, in the preparation of instructions, professional advice should be taken.

The time given for preparing the design must not only be long enough for that, but must make some allowance for the ordinary occupations of competitors.

The drawings asked for should be as few as possible.

A distinction is desirable between the imperative conditions and those that may be waived.

A statement whether those who invite the competition have power to employ an architect; and, in limited competitions, a promise to employ the author of the successful design.

§ 2. *Judgment.*

In deciding upon the designs, professional advice should be taken.

Before the comparison, all designs which violate the conditions, and all extra drawings, should be thrown out.

Competitive drawings should always be publicly exhibited.

§ 3. *Recompense.*

THE ILLUSTRATIONS.

DESIGN FOR A CHURCH. MESSRS. WARE AND VAN BRUNT, ARCHITECTS.

THIS design was prepared for St. Paul's Church at Cleveland, O., the late Rev. Frederick Brooks being then the rector. The main points of interest are the arrangement of the plan, in which, by making the transepts wider than the nave, the architects have con-

HELIOTYPE

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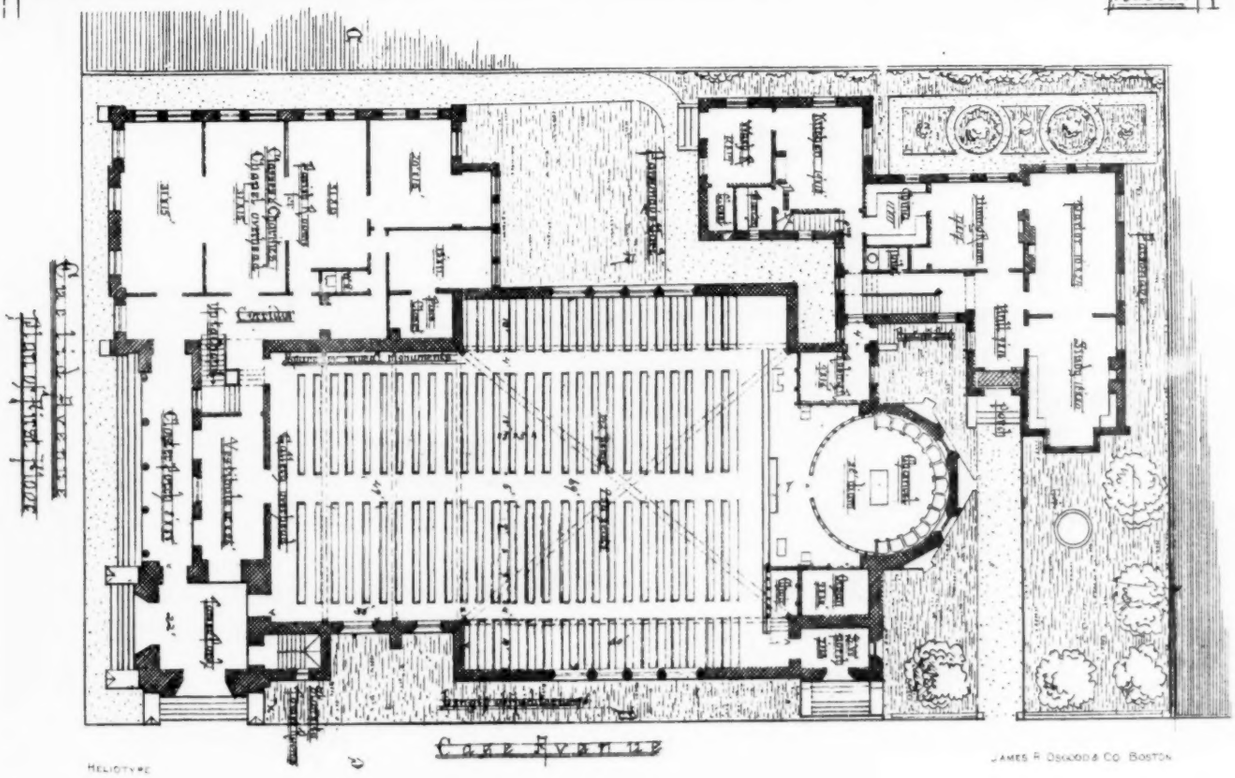
DESIGN FOR ST. PAUL'S CHURCH, AT CLEVELAND, O. WM. R. WARE & HENRY VAN BRUNT, ARCH'TS. BOSTON



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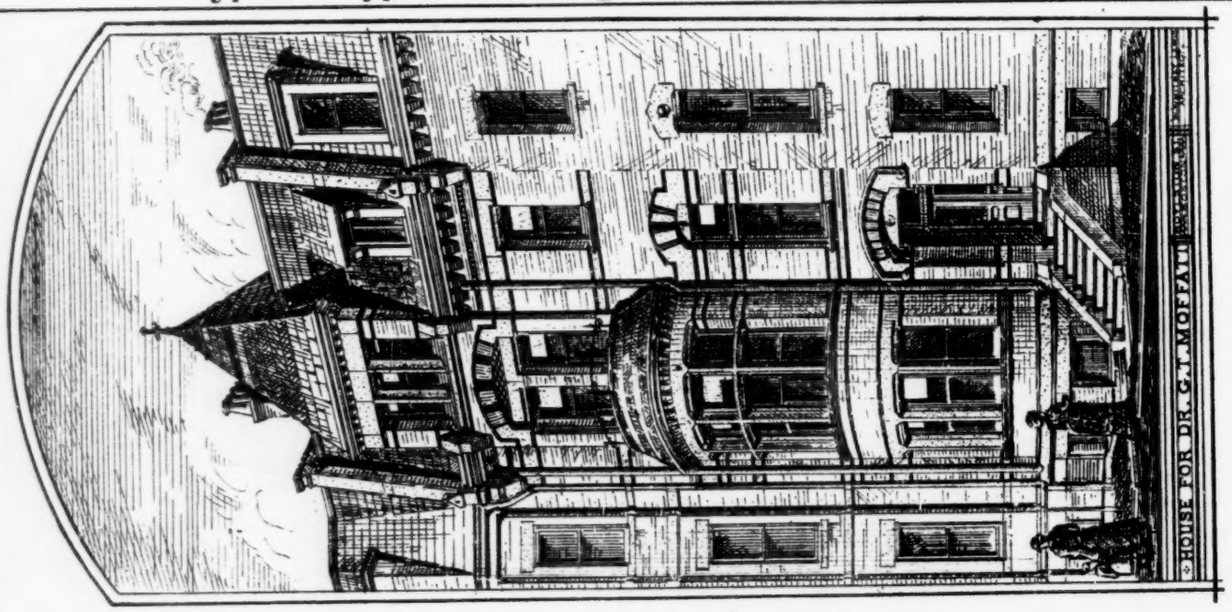

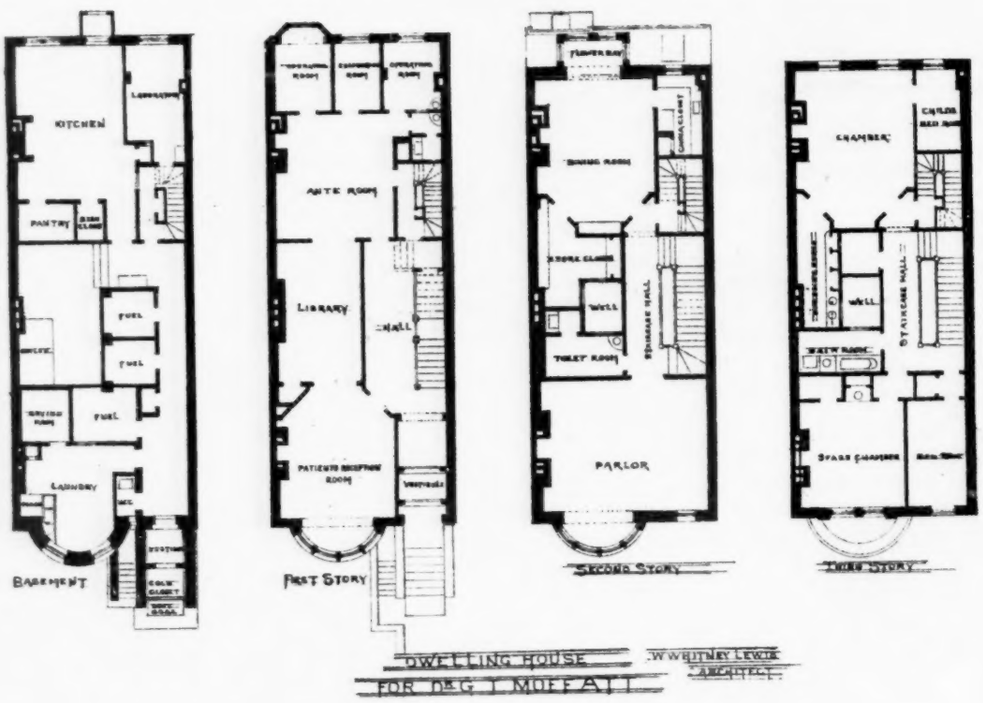

DWELLING HOUSE FOR DR G I MOFFAT

W WHITNEY LEWIS ARCHITECT

HELIOTYPE

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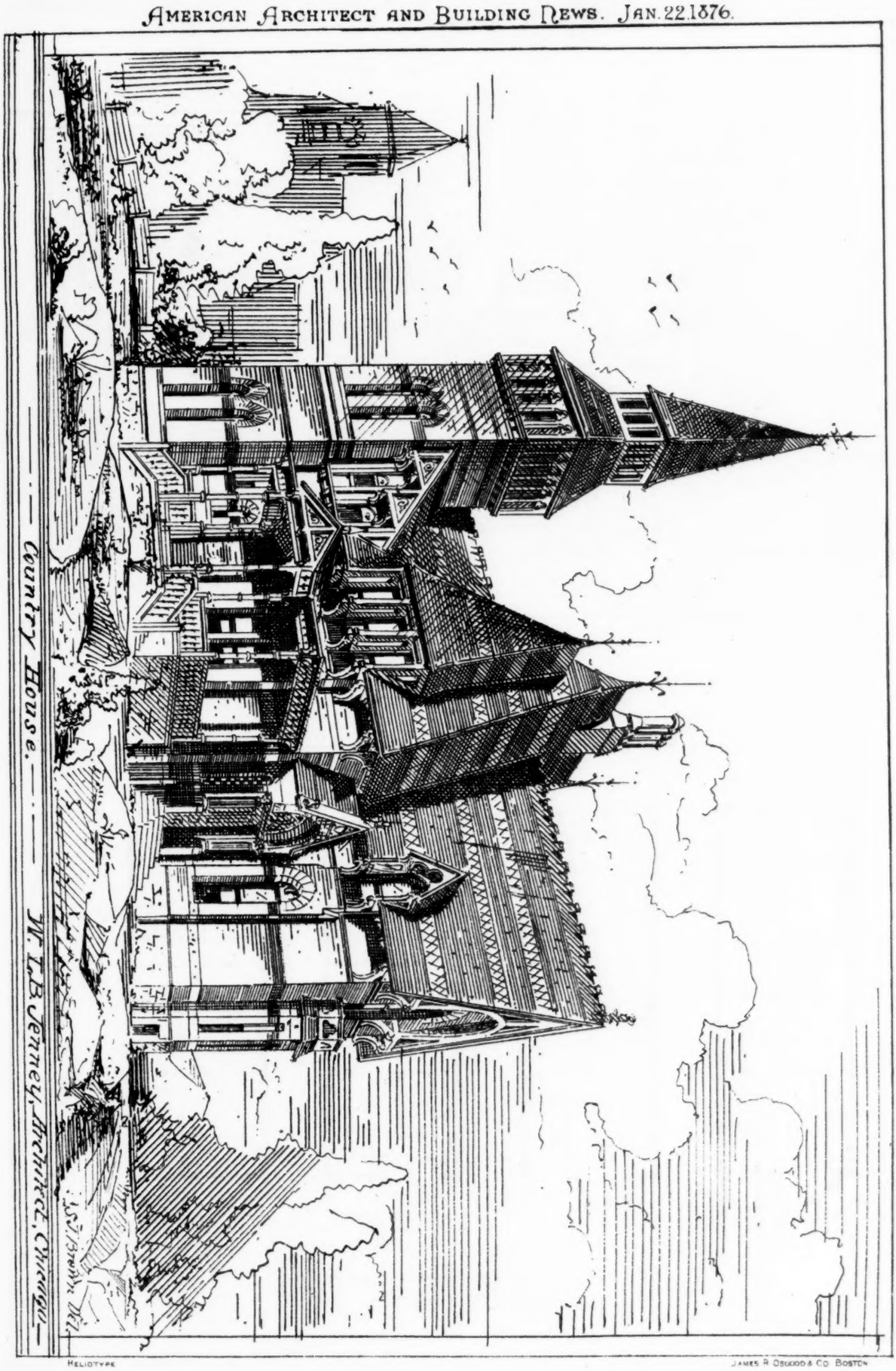

Country House. — W. L. B. Jenney, Architect, Chicago.

HELIOTYPE JAMES R. OSGOOD & CO. BOSTON

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trived to bring immediately in front of the chancel the greater part of a large auditory; and the apsidal form of the chancel, the circle of which is completed by the projection of the chancel rail. As may be inferred from the drawings, it was intended for a stone church with open timbered roof.

DETAILS FROM GENEVA AND BESANÇON.

Among the sketches of details from the Cathedrals of Geneva and Besançon, which we give with the illustrations of the present number, will be noticed the two clerestories, to which we referred in our notes on the Cathedral of Lausanne in an earlier number, as showing Burgundian influence. The slight inner arcade of these clerestories has in both cases a rare grace and lightness, which is set off by the manner of moulding the archivolt, with edge-rolls separated by a deep hollow. In the Besançon example the outer clerestory is a curious remnant of the eleventh or early twelfth century work; the two arcades superposed forming an outer wall behind the inner arcade, — a two-storied clerestory, such as we do not remember to have met with anywhere else. The openings of the upper arcade are splayed, the lower are squarely recessed. Of the pairs of coupled columns that carry the outer archivolts, the outer ones engaged in the piers are the original Romanesque ones: the inner detached columns are Gothic substitutions, inserted evidently when the inner screen was added in the thirteenth century. The clerestory of Geneva must be to all intents contemporary with this: the lower part of the nave is said to be of the eleventh century. We give one of the capitals, which shows the persistence of the classic influence. So also does the lower arcade of the apse, of which we give one or two bays showing the quadruple divisions, or double triforium; a tradition due perhaps to the galleries of the monastic churches, and which, though found in several of the earlier Northern churches, — as at Tournai, Laon, St. Rémi at Rheims, Limbourg, and other Rhemish churches, — gave way quickly on the establishment of the pointed style to the universal three-storied type. The drawings are copied from the editor's note-books.

HOUSE ON BOYLSTON STREET, BOSTON. MR. W. WHITNEY LEWIS, ARCHITECT.

This house, as the plans indicate, was arranged with especial reference to professional uses; and the reception-rooms, offices, and their adjuncts occupy the whole of the lower floor. It is built of brick, with water-table and steps of brown stone; the rest of the stone is from Nova Scotia.

COUNTRY HOUSE. MR. W. L. B. JENNEY, ARCHITECT.

FROM A LETTER OF M. ERNEST RENAN TO THE REVUE DE DEUX MONDES OF NOV. 15.

PALERMO, with Monreale, Cephalonia, and if you please Messina, form a chapter by themselves in the history of art; they present a combination elsewhere without example. The Arabs, during their occupation of the western end of the island, introduced there their charming way of building, while in the east the Byzantine influence still prevailed. When the Norman chiefs made the complete conquest of the island, the Arabs continued to practise their customs and their arts; and, when the Williams and the Rogers wished to build palaces and churches, they had recourse to the Arab architects and masons, who naturally did what they knew how to do. The Byzantine decorations were then added. But the Norman clergy seem to have exercised a decisive influence, imposing the general plan of the style to which they were accustomed. The Abbey of Monreale and the Cathedral of Cephalonia are just St. Stephen's at Caen, clothed with mosaics, and treated with Arab and Byzantine detail. Thus, under the large-minded and conciliatory spirit of this dynasty, arose an art which in its day, the beginning of the twelfth century, was the first in the world. The Norman conquest, here as elsewhere, seemed to unite under vigorous chiefs who were not long in identifying themselves with the conquered people, and in uniting all these varied elements into a really national life. The trilingual inscriptions in Greek, Arabic, and Latin, to which, indeed, Hebrew is sometimes added on account of the Jews, are a perfect expression of this strange world.

We must not expect of art that it will justify the means by which its effects are produced. These three elements would seem to be utterly irreconcilable, but they are united with the most delightful effect in these Sicilian monuments. The chapel of the palace, as well as the room called Roger's Chamber, are among the treasures of the world. It was the last thing I should have looked for after what I had seen in the East. The Eastern Christians would not have ventured to build a chapel exactly like a mosque with stalactite pendentives and Cufic inscriptions. They would have been shocked at the very idea of employing such Mahometan forms in a church. The cupola of the chapel is a wonder of grace and of elegant construction. It is a miniature Mosque of Omar; and here, as there, the Greek orders are used with the nicest feeling. Yet it was built by Roger the Second, as late as 1132. The Church of St. John also, with its three apses and five small domes, seems to have been originally a mosque; but it was not. There is no question that it was built for a church. What shall I say of the Martorana? — a perfect jewel, with its Greek and Arabic inscriptions, so strangely transformed into a chapel for nuns, who, leaving intact much of the original structure, have accommodated it to their needs in a style by no means unpretending, but which is just for that reason all the more delightful and *naïve*. And here the problem of restoration meets us point blank. Ought we to suppress these copper and marble playthings with which these poor women amuse themselves, these pretty gilt grills that let them satisfy their curiosity without breaking bounds, this gallery *à la Pompadour* where they sing on fête-days, these little gates where the original mosaics are mixed up with the most frightful rococo? For my own part, I should hesitate to lay hand upon them. Even rococo is expressive in its own way. What is history itself but the most ironical and incongruous association of ideas? Every thing has its value as a souvenir; and the monuments of the past must be accepted as the past has bequeathed them to us. Our duty is simply to preserve them. We have gone a good way beyond this in France, and, under pretext of restoring a unity which our buildings never possessed, have pulled down, built up, finished, completed, and made ready for the curses of the future archæologists, whose task will have been rendered singularly difficult by our indiscretions. We meet the same thing even in Italy. In trying to restore buildings to their original estate, the seventeenth and eighteenth centuries are in course of being suppressed. They were indeed a period of decadence in art, and the wanton injury they did to the remains of the middle ages cannot be too much deplored. But the harm is done. If, in making a clean sweep of these puerilities, we could hope to find things just as they were before, I would have them removed; but it would not bring back an atom of what the Martorana has lost. Let us leave it, then, as it is. Besides, taste is so fickle! Who can pretend to fix it? The seventeenth century sabred the middle age, without suspecting that this barbarous, incorrect, often savage art would one day have a value of its own. Now the seventeenth-century work is destroyed as flat and insipid; but who knows what will be the taste of the future? who can say that the nineteenth century will not in turn be treated as a Vandal? There is only one safe way of avoiding that treatment, — to destroy nothing, to leave the monuments of the past as they are. Italy, with her harsh and eloquent contrasts, seems so lovely as she is, that we dread to lay hand on any part of that wonderful combination, even the bad parts, even the *rococo*.

The palaces called La Ziza and La Couba were long considered to belong to the Arabian epoch, and it is said that Abd-el-Kader in visiting them shed tears over the fall of his race. The Arabic inscriptions beginning, "In the name of God, kind and pitiful," seemed proof positive. Signor Amari was the first to decipher them throughout; and what did he find? That they were built by William the First and William the Second. Here again the Arabs worked for the Normans. The architects did just as did Edisi the geographer, who composed for Roger his famous treatise, just as the poets made songs in Arabic in honor of their new masters.

At Monreale the Arab influence is less marked than at Palermo. Here the mosaics flash and flame in all their splendor. Fancy one of our cathedrals emblazoned all over like the pages of a great illuminated Bible. At Cephalonia the execution has an exceptional excellence. At Monreale some Bible scenes, especially of the Creation, are represented in an entirely novel fashion; the gates, too, recall those of Ghiberti at Florence in size and originality. They date from 1186.

FIRE-PROOF COLUMNS.

THE account which we append, of some experiments tried in Chicago with Messrs. Drake and Wight's patent fire-proof columns, will be found to be of special interest. At first thought, it may seem a paradox to attempt to protect an

iron column against fire by incasing it in wood; but if we remember how slowly wood burns in solid masses which expose but little surface to the air, and how singularly non-conducting it is, the paradox may disappear. The solid platform of alternate courses of timber and stone on which stood the second Eddystone Lighthouse, destroyed by fire in 1755, burned slowly for five days before it was quenched and carried away by the waves.

It may be premised that the coefficient of safety in iron columns can be much less when efficient measures are taken to protect them from the effects of fire. These effects are threefold: 1st, The softening of the metal, and consequent loss of rigidity. 2d, The expansion of the metal when heated, which, by increasing the length of the column, raises the floors, with a tendency to disrupt the structure. This is equivalent to the imposition of an additional weight never before contemplated, which the column is less able to carry on account of its softened condition and loss of rigidity. 3d, The snapping of a hot column when cold water is suddenly thrown upon it. The second effect is the one least thought of. Any one who has attempted to force up the floor of a building after the materials have acquired a permanent "set" can readily appreciate the terrific strain upon an iron column when it raises a floor one inch at red heat, which is a rough estimate of the average expansion of iron columns of ordinary height at this temperature. It is only from this view that we can account for the sudden shivering of cast-iron columns in burning buildings, where they have been only moderately heated. If the expansion caused by heat, instead of being exerted upon floors, is resisted by several stories of brick partitions tied into heavy exterior walls, it will be readily seen that a small fire built around one iron column in such a position would either force its foundation down into the ground, or shiver it to pieces; for it must destroy itself if nothing else yields.

We cannot give up the use of iron for supports, if it does expand, bend, and snap. We have no other material which combines so many advantages in other respects. Yet in the form of columns it is the first structural material to give way in burning buildings, especially as they are ordinarily constructed.

It was in view of many facts elicited from observation of the results of the great Chicago fire of 1871, and the experience of two double buildings in the same city shortly afterwards, that Mr. P. B. Wight, of the firm of Drake and Wight, instituted some experiments to test the value of the system of fire-proofing now practised by that firm. This invention was based on the following premises: 1st, that weak wooden posts were better in a fire than strong iron ones; 2d, that solid, or filled-in columns, beams, and lintels stood fire better than hollow ones; 3d, that the greatest amount of non-conducting material could be combined with the greatest amount of iron, to make a solid post, by giving the first the form of gores and the second the form of radiating webs; 4th, the importance of a *mechanical* method of uniting these materials so as to preserve the column against all the contingencies of a fire, such as the unequal expansion of its parts, sudden cooling by water, or injury from falling bodies or violence of any sort.

Two experiments were tried at Chicago. The first was in the latter part of August, 1874. It was unsatisfactory, because the arrangement was insufficient to maintain an intense heat for any length of time; the fire in this case being made with slabs heaped around the columns, which were in a vertical position, producing an open bonfire. The same castings were used in the second experiment, and consisted as follows: (1) One column of the Drake and Wight pattern in the centre of the group. This was twelve feet high, and ten inches in diameter outside, and consisted of a cast-iron core of cruciform section, sixteen inches in area, with four gores of red oak secured with counterswork battens to the webs of the core. The joints between gores were covered with wrought-iron battens; and the edges of the webs and the crevices between the wood and iron were filled with plaster of Paris, poured in from the top. The column had cap and base plates. (2) One unprotected core of cast iron like that used in the combination column. (3) A cast-iron cylindrical column twelve feet long, nine inches in diameter, and three-quarters inch metal, being twenty-one inches in sectional area. The three columns were set on end, one foot apart. Each stood on the centre of a twelve by twelve inch oak beam ten feet long; and the three beams rested on another twelve by twelve inch oak beam twelve feet long. The beams were covered with sand. Each column had a one inch round iron guy rod passing over the top, the two ends of which passed down through the ends of the beam on which the column stood, and were tightened with nuts and washers on the underside. A short bar of railroad iron was placed along the tops of the columns, and was secured at each end to the longitudinal beam in the same manner as the others. The rods all took the position of the strings to a cross-bow; the beams being the bows, and the columns representing the stocks. Thus the posts all had the strain of eight rods to represent the weight, and the nuts were screwed so tight that the beams all sprung nearly an inch from a straight line. Thus being set up, and the earth well filled around, a brick furnace was built about the columns, inside of the iron rods. The furnace was seven feet long, three feet wide inside, and eight feet high, built with draught openings around the bottom, and open at the top.

The experiment was tried Oct. 8, 1874, in the yard of the Union Foundry Works in Chicago, in the presence of two members of the Board of Underwriters, two leading architects, one builder, and the assistant fire-marshal, the latter being in charge of a force of hosemen ready for instant service. The furnace was filled with light kindlings of white pine to one-half the height, and above that with slabs. The fire was lighted at quarter past three, P.M., and burned with the greatest fury for one hour and a half. The arrangement of the bar of railroad iron on top permitted an examination of the relative expansion of the columns; and in less than half an hour the beam was half an inch above the protected column. It is to be regretted that instruments were not provided for noting this expansion by accurate observations. The heat of the furnace was so intense that it was difficult to get close enough to make a measurement, except by estimating; and at the end of an hour and a half, when the witnesses suggested that the fire be quenched with water, the difference in expansion was estimated by those present as from seven-eighths of an inch to one inch and an eighth. The opinion of a practised foundryman was given, that the expansion of the unprotected columns was enough to indicate nearly the melting point. The Drake & Wight column had hardly expanded at all according to this opinion.

The end of the furnace was accordingly torn down with hooks, and displayed the two naked columns at almost a white heat, and one of them perceptibly bent, while the protected column had a bright charred surface, and the exterior battens were slightly crimped. What followed is thus described by the witnesses in their report: "A stream of water was directed upon all the columns simultaneously from a fire-hose, while the fire was raging with the greatest intensity. The result was that the pillar similar to the iron core was broken at about one-third of its height. The cylindrical iron column was bent from two to three inches from a straight line; and both were in such condition that they would be unable to carry their load in a building. The "fire-proof" column remained upright, was not bent from a straight line, and was only affected by the fire in the charring of the wood gores, which did not exceed one inch in depth, the remainder of the wood being covered. It was demonstrated in this test that the column would do its work in a burning building, wherein under a similar heat, and upon the throwing-on of water, plain iron columns would have been destroyed.

The report is signed by Ducat and Lyon, Managers of the Home Insurance Company of New York; William W. Boyington and Henry L. Gay, architects; and P. J. Sexton, builder. M. W. Shay, Fourth Assistant Fire-Marshal, testifies that, in his opinion, the fire used on that occasion was fully as severe as that to which columns could be exposed in a burning store as long as they remain upright, and that, in his opinion, the column sustained the test far better than the other two unprotected iron ones.

A wood-protected column was chosen for experiment, for the reason that it is the cheapest form of column, and that about which the public were most likely to be sceptical. The form of column now used in Chicago is that in which blocks of porous terra cotta cut in lengths of about two feet are employed, and the exteriors are covered with a smooth coating of Portland cement. Had the unprotected column not been practically destroyed with the same fire to which the other was exposed, the experiment could not have been considered a success. Accordingly every effort was made which ingenuity could suggest, to produce the most intense heat. It is proposed, if occasion offers, to repeat the experiment on a column protected by the porous terra cotta and Portland cement process, and introduce a blast which will melt cast iron. Such a test might be made with propriety at the Centennial Exhibition. These are the first experiments of the kind ever undertaken in America, so far as we know.

Mr. Wight became convinced of the fallacy of using unpro-

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tected iron columns for the support of interior brick walls of buildings constructed of fire-proof materials, by the experiences of the old United States Custom House in the great Chicago fire. The burning of the contents of the first story, in this case, was sufficient to destroy the entire interior of the building, on account of the giving way of iron columns which were from fifteen to eighteen inches in diameter.

WATER-TRAPS AND SOIL-PIPES.

DR. FERGUS, President of the Faculty of Physicians and Surgeons, Glasgow, and a distinguished sanitary authority, has for a long time given attention to the question of the corrosion of old soil-pipes by the action of sewer-gas, and has been led to express his opinion on several occasions that the water-closet is under all circumstances dangerous, and that the whole system on which its use is based is as improper as it is costly. He inclines to the use of dry earth, or to some chemical treatment of domestic wastes. He makes no recommendation as to details, but believes that, if a small percentage of the cost of the present water-carriage system were judiciously used for experiment, some better plan would be found.

His latest paper on this subject is communicated to the Sanitary Record of Dec. 18.

In this he proves that the water-seal of an ordinary siphon-trap is scarcely to be regarded at all as a barrier to the passage of sewer-gas, and that it has the further disadvantage of retaining enough decomposing fæces to produce within the pipe itself a sufficient amount of sewer-gas to accomplish all the evil that is feared, except such as comes by the conveyance from the sewer itself of gases containing the germs of disease originating in other houses. He made a series of experiments with a bent tube, its bend being filled with water after the manner of the usual trap. In the sewer end of the tube he inserted a small vessel containing a solution of ammonia. In fifteen minutes the ammonia had passed through the water of the trap, and had bleached the colored litmus paper exposed at the house end. In another experiment he produced the rapid corrosion of a metal wire exposed at the house end. To prove that this transfusion takes place not only with ammonia, which is lighter than air, he made the same experiment with sulphurous acid, sulphuretted hydrogen, chlorine, and carbonic acid, all of which were transmitted so as to produce their chemical effect on the other side of the trap within from one to four hours.

He says, "We are therefore ourselves very strongly inclined to believe the last alternative, namely, that, however well drains may be trapped, sewer-gas will find its way from them into our houses; and any one who is acquainted with Graham's investigations as to the diffusion of gases will readily understand how this will happen."

The same experiments were made with a vented pipe; and although the action was retarded, it still took place. The venting was not such as is to be recommended, that is, there was no clear and direct flow of air through the pipe; but it is more effective than many devices now in use, and considered quite sufficient.

Concerning the decomposition taking place within the trap, it is his opinion that it is almost impossible, even with a copious flow of water, to cause undecomposed fæces to be discharged through the bend. With any ordinary flow there is only an eddying of the water in the trap, not a sufficient movement of the whole volume to carry floating matters under the bend. "No mere flow of water will carry out the fæces which simply kept whirling round in it."

Often, with the mistaken idea that by adding a few inches to the depth of water in the trap an effective resistance will be opposed to the pressure of sewer-gas, these are made quite deep. Dr. Fergus recommends that the dip or bend should be only sufficient to secure a sealing; for, the deeper it is made, the more complete will be the retention of decomposing matters at the house side of the trap.

In view of the large amount of water being discharged, he considers it practically impossible to use any disinfectant in sufficient proportion, and with sufficient regularity, to secure a chemical disinfection of the suspended organic matters.

"Recently, I was asked to inspect some houses where there had been a considerable prevalence of typhoid fever. I believe it had been imported into the district by milk, and spread by the influence of sewer-gas. The houses were good, and by no means old.

"In the interior I found that generally the water from the bath and a fixed basin passed into the trap of the water-closet, causing the water in the pan to be agitated every time the bath was discharged.

"This I consider a very bad arrangement, as the hot water would have a tendency to promote decomposition in the trap.

"Outside I found a large, deep cesspool, about three and a half by two feet, and from two to three feet deep.

"The entrance-pipe, bringing the rain-water and house-drainage, was a little above the level of the water in the cesspool, while the exit-pipe was several inches below the same level.

"Covering the whole at the surface of the ground was an impervious stone, fitting very tightly over the opening; in fact, it was hermetically sealed.

"On removing the stone there was considerable smell, and on stirring the water a copious evolution of gas; at the same time there was a considerable deposit at the bottom of the cesspool, although it had been cleaned out only two months before.

"The surface of the water was covered with floating fæces, which was not diminished by the most copious flushing. I have already remarked that there was the characteristic smell of sewer-gas, when the cover was taken off; and that the contents of the cesspool were in an active state of decomposition, as evidenced by the copious escape of gas when the contents were stirred.

"Now, in the every-day condition of this cesspool, with the cover impervious and sealed down, where did this gas escape to? Not into the open air; and not into the sewer, the opening into it being several inches below the surface of the water. It could only do so by the pipe bringing the house-drainage and rain-water into the cesspool. In a word, the decomposition of fæces in the trap of the water-closet being facilitated by the hot water from the bath, the cesspool, from its capaciousness and the depth of the exit-pipe, was as much a laboratory for the production of sewer-gas as if ingeniously contrived to be so. This gas was compelled by the close stone cover to pass either up the rain-water pipe, or into the houses; it would more probably do the latter, from the higher temperature within them. I have repeatedly found the house pipes to the drain carelessly jointed and badly laid, giving free escape to foul gas, which may, however, have some distance to travel before it finds exit, and thus render it extremely difficult to discover whence the smell originates."

Reviewing the mortuary record of the Registrar General from 1838 till 1871, he shows, that while what he calls "excremental pollution diseases" averaged, during the first five years of the period, 298 deaths per million of the population from diarrhœal diseases, during the last five years the average amounted to 1161 per million. There was no cholera epidemic in either of these five years. Deaths from diphtheria rose from two cases per million in 1851, to 487 cases per million in 1859.

From 1838 to 1842 the deaths from zymotics were 3,770; from other causes, 18,308. From 1867 to 1871, the deaths from zymotics were 4,282; and, from other causes, 18,059. There was a decrease of deaths from other causes, and an increase in those from zymotic diseases, showing an improvement in general vitality; while from the greater use of badly arranged closets the local causes of deaths increased.

While referring to engineers the question of details, he gives the following hints concerning the general subject of drainage: —

"1. Streams should never be arched over, and used as sewers; because, as the bed is always irregular and uneven, the flow will be retarded, and refuse matter will lodge and decompose in the crevices. If it is ever advisable to follow the course of a stream, then a regularly built sewer should be constructed.

"2. Care should be taken that sewers are laid in firm earth that will not 'give.' In 'made,' or loose sandy soil, they should be laid in concrete, or Brooks's patent might be used.

"3. If, also, sewers are to pass through walls, great care should be exercised to prevent pressure upon them from the subsidence of the said walls. This might be done by making an archway, and allowing the drain to pass under it free from all contact. When this is not attended to, the drains frequently get broken or cracked, and so allow the escape of noxious gases.

"4. The small drains should open obliquely into the larger, in the direction of the current of water running in the latter.

"5. Iron and glazed earthenware pipes should be used as much as possible for house, soil, and drain pipes, — lead pipes being very subject to decay.

"6. There should be a disconnection between the house-drains and the sewers, to effect which a number of contrivances have been suggested. When complete severance cannot be effected, there should be free openings both on the house and sewer sides of the trap.

"7. A plan of all the drains of each town and district should be prepared, and be readily accessible to the public; and in the same plan the subsoil of the locality should be indicated.

"8. A plan of all the house-drains, showing their connection

with the sewers, should be given with the title-deeds of every house.

"It is quite a mistake to conceal house-soil pipes by putting them, as is generally done, in some out-of-the-way corner, covered from view, defects in them existing and producing much mischief without being suspected. Even the drains in the basement of houses should be laid in a built tunnel, covered with flags, so that from time to time any of them might be lifted, and the drain inspected.

"9. The laying of drains, their jointings and levels, insertion of soil-pipes, and, indeed, every thing connected with drainage, should be subjected to a most stringent and intelligent supervision."

NOTES AND CLIPPINGS.

THREE important public buildings are still in progress in England. Of these, the Law Courts of Mr. Street, and the Natural History Museum designed by Mr. Waterhouse, will probably require some years yet for their completion. The Law Courts are blocked out in plan upon the ground, and the eastern block has reached the height of one story. Many workmen are busy on other portions of the site. The Natural History Museum, which is building at South Kensington, is in very nearly the same stage of progress as the Law Courts. This building is to be substantially of brick and terra cotta, in a round-arched style; and it is expected that it will exercise considerable influence upon the use of terra cotta as a method of decoration. The third building alluded to, the Manchester Town Hall by Mr. Waterhouse, is now almost completed, some of the interior fittings being already in place. The architect has been praised for the ingenuity with which he has met the difficulties imposed on him by the triangular shape of the piece of land occupied by the building.

THE British Royal Academy, it is said, has decided to increase its number by four additional members. As all the members enjoy a right to a pension, their number evidently cannot be much increased beyond its present limits. It is reported that henceforth foreign artists will be eligible for membership. By a recent alteration in its rules, the Academy decided that the interval between a vacancy, and the choice of a successor, should not exceed six weeks. The next election takes place Jan. 30, when these rules will take effect.

OF the restorations of English cathedrals, in progress or completed, we note the following: —

Sir Gilbert Scott has completed the restoration of Bath Abbey, the works at Ely and St. Asaph, and the section of Rochester Cathedral undertaken by him. He has also been engaged on works of more or less importance at St. Alban's, Durham, Winchester, and Norwich. The restorations at Salisbury by the same architect are still progressing. Mr. Street is engaged on the restoration of Bristol Cathedral, and the south transept of York. He lately added a reredos to Carlisle.

It has been decided to place a monumental brass in Chichester Cathedral, and to restore the campanile, in which the clock and chimes are to be placed as a memorial to the late Dean Hook. The restorations will be under the direction of Sir Gilbert Scott.

The restoration of the Albert Memorial Chapel, otherwise known as the Wolsey Chapel, at Windsor, is noticeable as being the joint work of Sir Gilbert Scott and a foreign artist, Baron Triqueti, of different training and views. The interior of this chapel is of Tudor architecture, and has been restored and decorated by Sir Gilbert Scott from the vault down to a string-course under the window-sills. The considerable wall space below this line has been divided by Baron Triqueti into large panels of an Italian Gothic character which he has filled with designs of sacred subjects incised on marble. The effect is said to be that of a well-finished cartoon for a fresco. The floor, also by Baron Triqueti, is polished, and displays a great variety of costly marble. The general effect of the interior, from the costliness and lavish use of the materials employed and the excellent character of the workmanship, is exceedingly rich; but there is a lack of harmony arising from the differing tastes of the artists employed.

IT has been resolved to complete the restoration of the exterior of the octagon of Ely Cathedral. Sir Gilbert Scott is to be consulted with regard to it. It is hoped that the rebuilding of the north-west transept may be soon undertaken. Promises of help have been received, which will secure the payment of the debt upon the decorated lantern, and leave about two thousand pounds for further restorations.

THE natural history (zoölogical) museum at Copenhagen, lately completed, is spoken of as interesting, both architecturally and from the extent and methodical arrangement of its collection. It comprises a large interior hall, or court, reaching through four stories, and covered by a glass roof. Its architecture is florid, of a sort of Gothicized Renaissance, and is sculptured with animal forms. Enclosing this court, which is devoted to the exhibition of the larger mammalia, are rooms or cabinets, arranged in three stories, and containing an extensive collection of the smaller animals. The collection of fishes occupies the basement.

MR. WILLIAM H. WHITE, in his paper read before the Architectural Association, thus described the construction of the lintels and floors of French houses: —

"The rest of the front will be supported by coupled iron columns placed between stone piers. The girders they support are of rolled iron, also coupled, and about ten inches deep, which will suffice to carry my façade of fifty feet of masonry. These girders are secured together with wrought-iron collars about four feet apart. Planks having been temporarily placed under them, they will be filled with bits of broken brick, lumps of old plaster partitions, &c., and the whole 'run' in fresh plaster. A solid lintel of iron and plaster is thus formed about eighteen inches thick, eleven inches deep, and from six to eight feet long. Similar lintels are being placed over all the internal piers; and upon them the rolled-iron joists forming the floor of the first story will be laid. These lintels will also receive the weight of the partitions of the different stories over. The completed flooring, including the ceiling and parquetry, will not exceed twelve inches in thickness. The rolled joists are placed thirty inches apart; and at right angles to them are fixed wrought-iron bars, which are bent at the ends so as to clip the upper flange of the joist, and permit the bottom of the bar to be level with the lower flange of the joist. These bars are placed about three feet apart, and as much as possible in a straight line, for they will act as a strut. A blow suffices to fix them. Upon these bars, in lines parallel with the joists, and of the same length, light iron rods are laid. All this iron has received two coats of paint (of *minium de fer*), and the skeleton is ready to be converted into a concrete floor. A temporary ceiling of planks is erected under the iron skeleton. Upon this planking are thrown bits of old plaster, brick, and hard rubbish of all kinds, until the whole space between the joists is filled up almost to the level of their top flanges. Liquid plaster is then run into and over the whole mass of iron and ballast; and, the morning after, the temporary planking may be removed. But this useful substance, plaster, has a tendency to swell; and, if a small cavity be not left between the solid plaster floor and the stone wall, the latter will be pushed outwards. It is usual at the level of each floor to tie in the external and party-walls with iron bands, looped at different points over circular iron rods (*ancres*), inserted vertically in the centre of a solid block of stone. These bands are hooked together midway between the rods."

MR. RUSKIN proposes to found a model village, which shall illustrate his principles of good taste and beauty. He has obtained a site near Sheffield, and also subscriptions in support of his scheme to the amount of some eight thousand pounds. He intends to build a number of cottages, to found a museum, and to carry out his long-cherished plan as far as his funds will allow.

THE new extra-mural boulevard around Paris, long talked of, is to be undertaken at once, and is expected to save much tracking of wagons through the city. The *Conseil Général de la Seine* voted six hundred thousand francs toward the work last year.

H. R. H. THE DUKE OF EDINBURGH laid the first stone of the new opera-house, Thames Embankment, on Thursday, the 16th of December. The building was to be opened in May; but it is expected that it will not be completed by that time.

THE harbor of Calais is to be improved, and made capable of receiving large vessels at all times of the tide.